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Motor vehicle battery switch assembly having safety device preventing accidental operation - has slider having lug engaging detent to hold pushbutton in OFF position and movable against spring to allow pushbutton to operate to ON position

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Number of Countries: 003 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 655757	A2	19950531	EP 94830508	A	19941028	199526 B
EP 655757	A3	19970611	EP 94830508	A	19941028	199735
EP 655757	B1	20010425	EP 94830508	A	19941028	200124
DE 69427147	E	20010531	DE 627147	A	19941028	200138
			EP 94830508	A	19941028	

Priority Applications (No Type Date): IT 93UMI924 U 19931125

Cited Patents: No-SR.Pub; DE 1947014; DE 4229756; US 4504707

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 655757	A2	E	6	H01H-003/20	
Designated States (Regional): DE FR GB					
EP 655757	A3			H01H-003/20	
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DE 69427147	E			H01H-003/20	Based on patent EP 655757

Abstract (Basic): EP 655757 A

The switch assembly comprises an operating pushbutton (1) which can be displaced from an OFF to an ON position and vice-versa. It also includes a slider (10) having a lug (11) attached to it. Preferably the lug extends into the pushbutton through a slot (12).

The lug engages with a locking element (15), e.g. detent, to hold the pushbutton in an OFF position. The lug can be disengaged from the detent by moving the slider against a resilient member (20), e.g. spring. This allows the pushbutton to pass from the OFF to the ON position.

USE/ADVANTAGE - Provides important safety element for vehicles transporting dangerous goods.

Dwg.2/3

Derwent Class: V03; X16; X22

International Patent Class (Main): H01H-003/20

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(54) **Switch assembly including a safety device for preventing the switch from being accidentally actuated, in particular for motor vehicles and the like**

Schaltanordnung mit Sicherheitsvorrichtung zum Verhindern einer unbeabsichtigten Betätigung,  
insbesondere für Kraftfahrzeuge

Dispositif de commutation comprenant un moyen de sécurité pour empêcher un actionnement  
intempestif, en particulier pour véhicule à moteur

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**20122 Milano (IT)**

(56) References cited:  
**DE-A- 1 947 014** **DE-A- 4 229 756**  
**US-A- 4 504 707**

**EP 0 655 757 B1**

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## Description

### BACKGROUND OF THE INVENTION

[0001] The present invention relates to a switch assembly including a safety device for preventing the switch from being accidentally actuated, in particular for motor vehicles and the like.

[0002] As is known, it is frequently necessary to provide, in electric systems, a switch which is normally held in an OFF position and can be switched to its ON position exclusively as it is required.

[0003] This is the case, in particular, of the motor vehicles in which there is usually provided a switch for switching off the electrical connection with the vehicle battery, which switch, particularly for vehicles provided for transporting dangerous goods, represents a very important safety element.

[0004] A very important feature of such a switch is that it can not be accidentally switched on since, in such a case, it would switch on the battery thereby providing a dangerous condition, in particular as the vehicle is in movement.

[0005] Prior switches for the above mentioned use, for example, the switch assembly in accordance with the preamble of claim 1 and known from DE-A-1 947 014, have not been found to be fully satisfactory in operation.

### SUMMARY OF THE INVENTION

[0006] Accordingly, the aim of the present invention is to provide a switch assembly, including a safety device adapted to prevent the switch assembly from being accidentally actuated, in particular for motor vehicles and the like, which requires a deliberated operation to be switched to its ON condition.

[0007] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a switch assembly which, while having remarkably improved operating features, is moreover very simple from a mere construction standpoint and can be made by conventional methods for making switches.

[0008] Another object of the present invention is to provide such a switch assembly which is very reliable and safe in operation and which, moreover, can be easily made starting from easily commercially available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

[0009] The above mentioned aim and objects are achieved by a switch assembly including a safety device for preventing said switch assembly from being accidentally actuated, in particular for motor vehicles and the like, as defined in claim 1.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Further characteristics and advantages of the invention will become more apparent from the following

detailed disclosure of a switch assembly including a safety device for preventing the switch from being accidentally actuated, in particular for motor vehicles and the like, which is illustrated, by way of an indicative, but not limitative, example, in the accompanying drawings, where:

Figure 1 is a schematic top plan view of a portion of the push-button of the switch assembly, this figure clearly illustrating the slider included in the switch; Figure 2 is a cross sectional view, substantially taken along the line II-II of Figure 1; and Figure 3 is a further cross-sectional view, substantially taken along the line III-III of Figure 1.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] With reference to the number references of the above mentioned figures, the switch assembly including a safety device for preventing the switch from being accidentally actuated, in particular for motor vehicles and the like, and which has been generally indicated at the reference number 1, comprises a switch body 2, which can be of any conventional type, thereon there is applied a push-button 3, for example of a swinging type, which is articulated about its pivot-pin 4.

[0012] The main feature of the invention is that on the push-button 3 there is located a slider 10 provided with a lug 11 extending inside the push-button through a slot 12.

[0013] More specifically, the lug 11 is provided with side legs 13 which, as the switch is assembled, resiliently yield to be easily introduced into the slot and then they will spread apart to engage abutments 14 so as to prevent the slider from disengaging.

[0014] At the inner end portion thereof, the lug 11 can be removably connected with a detent element 15 provided on the body of the switch and adapted to prevent the push-button from being operated, since it can not swing even if subjected to a pressure, because the lug 11 will abut against the detent or locking element 15.

[0015] Accordingly, the switch assembly will be held in its OFF position, and it can be operated or switched to its ON position exclusively by operating the slider 10 to cause said slider to be displaced, against the biasing of resilient means, such as a spring 20, operating between the lug 11 and the side walls 21 of the push-button 3.

[0016] Moreover, as shown, the spring 20 is engaged with a centering peg 22, provided on the lug 11.

[0017] If the slider 10 is driven, against the urging of the spring 20, then the lug 11 will be disengaged from the detent or locking element 15 and, accordingly, the push-button can be operated, by causing it to swing or toggle, as is shown by the dashed line in Figure 3.

[0018] Under these conditions, the switch assembly will be switched to its ON position and, accordingly, the connection with the electric battery of the motor vehicle

will be disengaged or switched-OFF.

[0019] On the other hand, as the push-button is returned to its OFF position, the spring will cause the slider to be driven again to its starting position, which operation will be aided by the provision of a cut-out 30 on the lug 11 which will allow said lug to be re-located above the locking or detent element 15.

[0020] From the above disclosure, it should be apparent that the invention fully achieves the intended aim and objects. In particular, the fact is to be pointed out that a switch assembly has been provided which is very simple construction-wise, while being very efficient, since the provision of the slider will prevent the switch assembly from being accidentally switched ON: in fact, in order to switch ON the switch assembly, is necessary to carry out an additional operation of driving the slider against the spring 20.

[0021] The invention as disclosed is susceptible to several modifications and variations all of which will come within the scope of the claims.

[0022] In practicing the invention, the used materials, as well as the contingent size and shapes can be any, depending on requirements.

## Claims

1. A switch assembly (1) including a safety device for preventing said switch assembly from being accidentally actuated, in particular for motor vehicles and the like, comprising an operating push-button (3) which can be displaced from an OFF position to an ON position and vice versa, and, on said push-button (3), a slider (10) provided with a lug (11) which is removably be engagable with a locking element (15) in order to hold said push-button (3) in an OFF position thereof, said lug having a centering peg (22) integral therewith and extending substantially perpendicular therefrom, said slider (10) being adapted to be driven, against resilient spring (20), in order to disengage said lug (11) from said locking element (15) and allow said push-button (3) to pass from the OFF position thereof to the ON position thereof, said lug (11) extends inside said push-button (3) through a slot (12) formed through said push-button, characterized in that said centering peg (22) has a length slightly less than that of said lug and extends toward a side wall (21) of said push-button (3), that said resilient spring (20) is coiled on said centering peg for the overall length thereof and between said centering peg and said side wall (21) and that said lug (11) is provided with resilient side legs (13) which, as the switch is assembled, resiliently yield to be easily introduced into said slot and then being spread apart to engage abutments (14) on said push-button (3) so as to prevent said slider (10) from disengaging.

2. A switch assembly, according to Claim 1, characterized in that said lug (11) is provided, at a free end portion thereof, with a cut-out (30) to allow said lug (11) to be easily arranged above said locking element (15) as said push-button (3) is driven from the ON to the OFF position thereof.

## Patentansprüche

1. Schalteinrichtung (1) mit einer Sicherheitsvorrichtung zum Verhindern einer unbeabsichtigten Betätigung der Schalteinrichtung, insbesondere für Kraftfahrzeuge und dergleichen, die eine Bedienungs-Drucktaste (3) aufweist, die aus einer AUS-Position in eine EIN-Position und umgekehrt verlagbar ist, wobei die Drucktaste (3) einen Schieber (10) mit einem Ansatz (11) aufweist, der mit einem Arretierelement (15) lösbar in Eingriff bringbar ist, um die Drucktaste (3) in ihrer AUS-Position zu halten, wobei der Ansatz einen mit ihm integralen Zentrierstift (22) aufweist, der sich im wesentlichen senkrecht von ihm aus erstreckt, wobei der Schieber (10) so angepaßt ist, daß er gegen eine Druckfeder (20) gedrückt wird, um den Ansatz (11) aus dem Arretierelement (15) außer Eingriff zu bringen und es der Drucktaste (3) zu ermöglichen, aus ihrer AUS-Position in ihre EIN-Position überzugehen, wobei sich der Ansatz (11) innerhalb der Drucktaste (3) durch einen durch die Drucktaste hindurch ausgebildeten Schlitz (12) erstreckt, **dadurch gekennzeichnet**, daß der Zentrierstift (22) eine Länge aufweist, die etwas geringer ist als diejenige des Ansatzes, und sich in Richtung einer Seitenwand (21) der Drucktaste (3) erstreckt, daß die Druckfeder (20) zwischen dem Zentrierstift und der Seitenwand (21) über dessen Gesamtlänge auf den Zentrierstift aufgewickelt ist, und daß der Ansatz (11) federnde Seitenschenkel (13) aufweist, die, wenn der Schalter zusammengebaut ist, federnd nachgeben, so daß sie leicht in den Schlitz eingeführt werden können und dann gespreizt werden, um mit Anschlagstücken (14) auf der Drucktaste (3) in Eingriff zu gehen, um ein Bringen des Schiebers (10) außer Eingriff zu verhindern.
2. Schalteinrichtung nach Anspruch 1, **dadurch gekennzeichnet**, daß der Ansatz (11) an einem freien Endabschnitt einen Ausschnitt (30) aufweist, um es zu ermöglichen, daß der Ansatz (11) leicht über dem Arretierelement (15) positioniert werden kann, wenn die Drucktaste (3) aus ihrer EIN- in ihre AUS-Position gedrückt wird.

## Revendications

1. Assemblage avec commutateur (« switch assembly ») (1) comprenant un dispositif de sécurité pour empêcher ledit assemblage avec commutateur d'être actionné de manière accidentelle, en particulier pour les véhicules à moteur et analogues, comprenant un bouton-poussoir de fonctionnement (3) qui peut être déplacé d'une position ARRET à une position MARCHE et vice-versa, et, sur ledit bouton-poussoir (3), une pièce coulissante (10) munie d'un écrou de fixation (11) qui est en prise, de manière amovible avec un élément de blocage (15) de manière à maintenir ledit bouton-poussoir (3) dans une position ARRET, ledit écrou de fixation présentant une cheville de centrage (22) intégrant celui-ci et s'étendant de manière sensiblement perpendiculaire, ladite pièce coulissante (10) étant adaptée pour être actionnée, contre un ressort résilient (20), de manière à dégager ledit écrou de fixation (11) dudit élément de blocage (15) et permettre audit bouton-poussoir (3) de passer de sa position ARRET à sa position MARCHE, ledit écrou de fixation (11) s'étend à l'intérieur dudit bouton-poussoir (3) à travers une fente (12) formée à travers ledit bouton-poussoir, caractérisé en ce que ladite cheville de centrage (22) présente une longueur légèrement inférieure à celle dudit écrou de fixation et s'étend vers une paroi latérale (21) dudit bouton-poussoir (3), et en ce que ledit ressort résilient (20) est enroulé sur ladite cheville de centrage dans la direction de sa longueur totale et situé entre ladite cheville de centrage et ladite paroi latérale (21) et en ce que ledit écrou de fixation (11) est muni de bras latéraux résilients (13) qui, alors que le commutateur est assemblé, se déforment de manière résiliente pour être facilement introduits à l'intérieur de ladite fente et sont ensuite écartés pour s'enclencher contre des butées (14) sur ledit bouton-poussoir (3) de manière à empêcher le dégagement de ladite pièce coulissante (10).
  - 5
  - 10
  - 15
  - 20
  - 25
  - 30
  - 35
  - 40
2. Assemblage avec commutateur, selon la revendication 1, caractérisé en ce que ledit écrou de fixation (11) est muni, à sa partie d'extrémité libre, d'une découpe (30) pour permettre audit écrou de fixation (11) d'être disposé facilement au-dessus dudit élément de blocage (15) alors que ledit bouton-poussoir (3) est actionné de sa position MARCHE à sa position ARRET.
  - 45
  - 50

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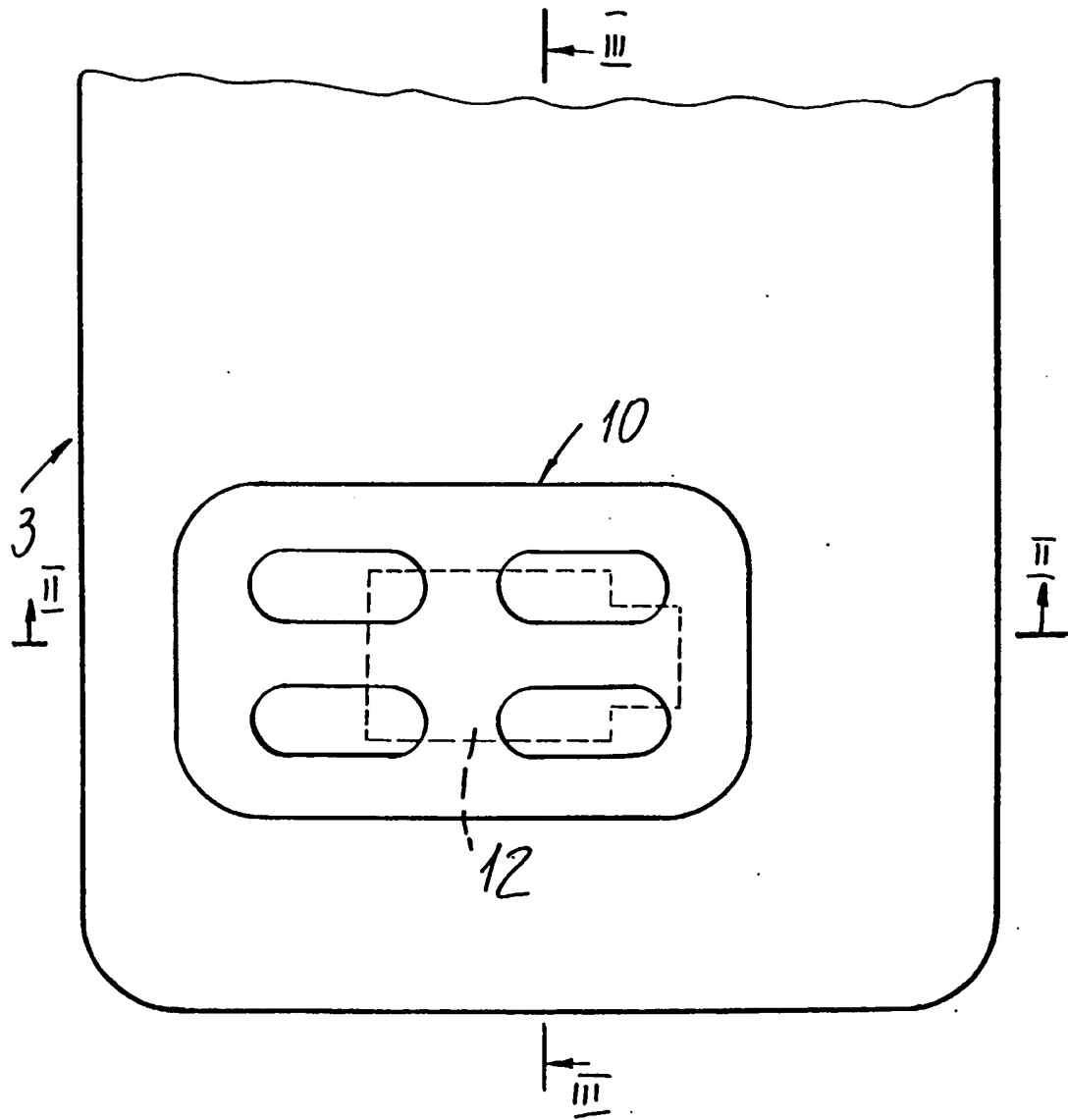


FIG. 1

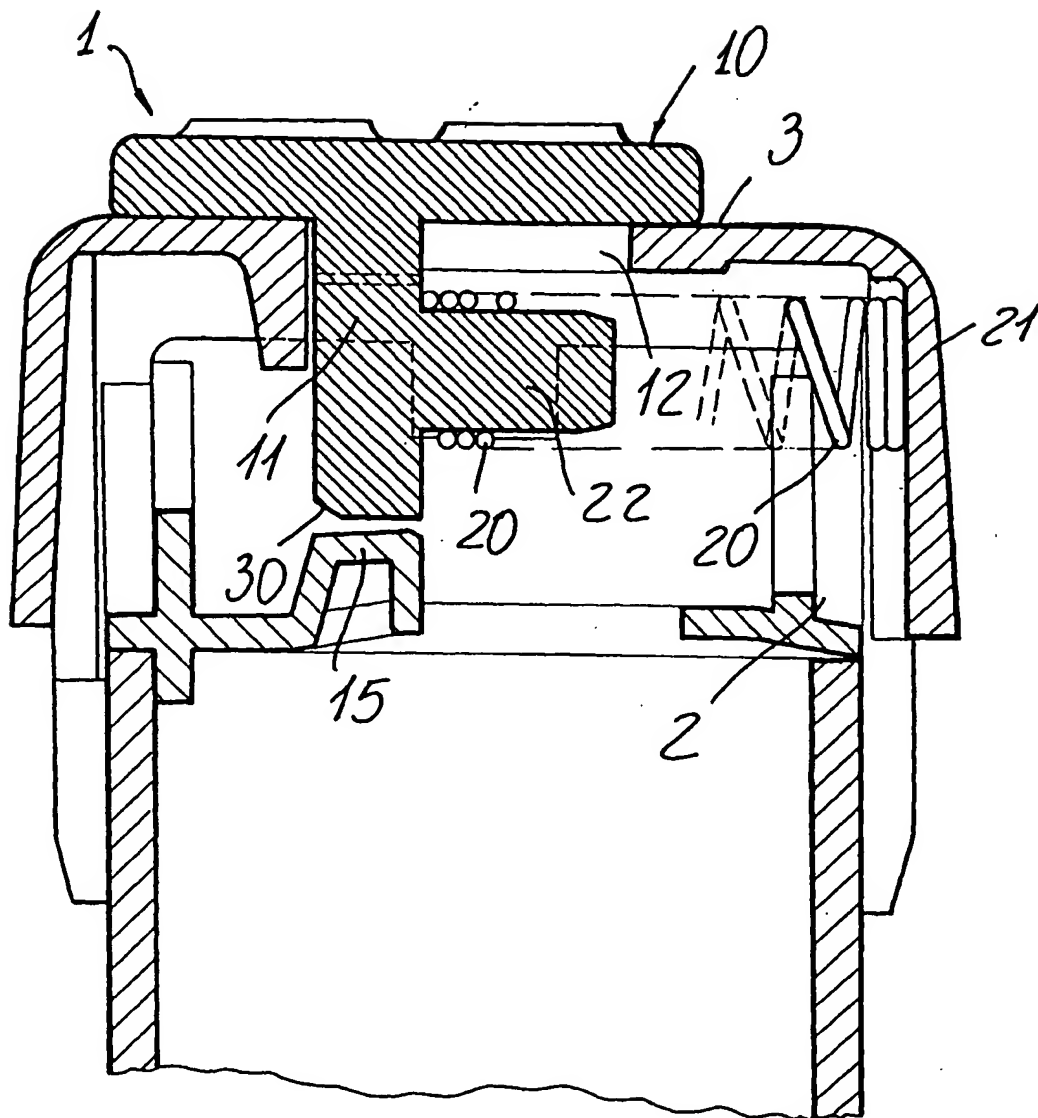


FIG. 2

